In The Claims:

Please cancel original claims 1-6 and cancel substitute claims 1-6, without prejudice, and add new claims 7-14 as follows:

7. (New) A process for fabricating active and passive polymer-based components for use in integrated optics according to a principle based on one of a gas-phase diffusion and a liquid-phase diffusion, comprising the steps of:

depositing onto an optoelectronic component at least one patternable polymer resist layer that is highly sensitive and that effects an intense polymerization when exposed;

producing an etching mask by exposing defined regions of the at least one patternable polymer resist layer corresponding to a later component;

transferring a geometry of the etching mask through a high-grade anisotropic deep etching into unprotected regions of the at least one patternable polymer resist layer located underneath the etching mask, wherein an etching agent is used that avoids attacking a silicon oxide of the etching mask, such that exposed regions of the at least one patternable polymer resist layer are ablated in a vertical direction, and side surfaces of regions protected by the etching mask are uncovered; and

filling unexposed regions of the at least one patternable resist layer with organometallic compounds arranged in a monomer form, the organometallic compounds being suitable for filling an already existing pattern of the at least one patternable polymer resist layer and for breaking up and repatterning the already existing pattern, wherein an optical property of the optoelectronic component is capable of being selectively changed as a function of a type of the monomeric organometallic compounds and as a function of a temperature and an application time, the filling of the unexposed regions of the at least one patternable resist layer occurring, through one of the gas-phase diffusion and the liquid-phase diffusion and with an application of heat, from a surface of the unexposed regions through the etching mask, and occurring from the side surfaces uncovered by the deep etching.

8. (New) The process according to claim 7, wherein the at least one patternable polymer resist layer includes novolak.

9. (New) The process according to claim 7, wherein the organometallic compounds include heavy metal-containing compounds.

10. (New) The process according to claim 7, further comprising the step of:

selectively controlling a swelling occurring during the one of the gas-phase diffusion and the liquid-phase diffusion in the at least one patternable polymer resist layer by varying a time for the one of the gas-phase diffusion and the liquid-phase diffusion and varying the temperature until a compensation for pattern inaccuracies occurs.

11. (New) The process according to claim 7, further comprising the step of:

using one a vacuum and air at a standard pressure in interstices of the at least one patterned polymer resist layer in order to adjust a difference in refractive indices of >1.5 with respect to patterns in the filled at least one patternable polymer resist layer.

12. (New) The process according to claim 7, wherein:

the at least one patternable polymer resist layer includes a polymer pattern filled with the monomeric organometallic compounds,

the polymer pattern filled with the monomeric organometallic compounds is surrounded by electrical electrodes, and

optical properties of the polymer pattern filled with the monomeric organometallic compounds are influenced by controlling an electrical field applied between the electrical electrodes.

13. (New) The process according to claim 7, wherein:

the at least one patternable polymer resist layer includes a polymer pattern filled with the monomeric organometallic compounds,

the polymer pattern filled with the monomeric organometallic compounds is

connected to waveguides,

light is injected through the waveguides and into the polymer pattern filled with the monomeric organometallic compounds, and

optical properties of the polymer pattern filled with the monomeric organometallic compounds are influenced by varying the injected light.

14. (New) The process according to claim 7, wherein:

the etching mask is produced by performing the steps of:

exposing defined regions of the at least one patternable polymer resist layer corresponding to the later component,

performing a silyation of the unexposed regions of the at least one patternable polymer resist layer, and

after performing the silyation, smoothing edges of the etching mask by an isotropic etching attack using an agent which attacks the silicon oxide of the etching mask.

In The Abstract:

Delete the present Abstract and in its place insert the following:

Abstract Of The Disclosure

A process for fabricating active and passive, polymer-based components for use in integrated optics. As a result of this process, active and passive optoelectronic components of a high quality having a high level of integration and high packing density are fabricated. A patternable polymer resist layer of a high quality is deposited onto an optoelectronic component. An etching mask is used in conjunction with a high-grade anisotropic deep etching to produce a pattern which is filled with monomers through gas-phase or liquid-phase diffusion. The optical properties of the optical component can be selectively changed as a function of the type of monomers used for the diffusion, as well as of the temperature and application time. The process makes it possible to increase the packing density of future integrated monomode optics and simultaneously produce large